

IN THE CLAIMS

The text of all pending claims, including withdrawn claims, is set forth below. Cancelled and not entered claims are indicated with claim number and status only. The claims as listed below show added text with underlining and deleted text with ~~strikethrough~~. The status of each claim is indicated with one of (original), (currently amended), (cancelled), (withdrawn), (new), (previously presented), or (not entered).

No claims have been amended, cancelled or added below.

1. (Previously Presented) An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up sheets of paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a front portion of the paper cassette and guide the paper transferred by the pickup roller, the apparatus comprising:

a stripper which is installed to be inclined at a predetermined angle with respect to the paper stacked on the paper cassette, and attached to at least one front side of each of the paper guides;

a lever which is installed at a side of the stripper and has a contact surface to contact the paper transferred by the pickup roller; and

a lever shaking unit which shakes the lever to intermittently contact a side of the paper transferred by the pickup roller, the lever shaking unit comprising

a lever shaft installed on the frame, the lever being connected to the lever shaft,

a shaking plate extending from the lever shaft, and

a shaker installed on the frame and intermittently shaking the shaking plate to shake the lever;

wherein a friction force is intermittently applied to the side of the paper by the lever, such that double feeding of the paper is prevented and

the stripper comprises an opening groove formed on an upper portion of the stripper such that the contact surface of the lever contacts the side of the paper through the opening groove.

2. (Cancelled)

3. (Previously Presented) The apparatus of claim 1, wherein the lever is shaken so that the contact surface periodically at least three times contacts the paper while a front end of the paper passes from a lower end of the contact surface to an upper end of the contact surface.

4. (Previously Presented) The apparatus of claim 1, wherein:
the stripper comprises a plurality of sub-stripers; and
the lever comprises a plurality of sub-levers having the same number as the sub-stripers.

5. (Original) The apparatus of claim 1, wherein the friction force intermittently applied to the side of the paper by the lever is larger than a resistance applied to the paper by the stripper.

6. (Original) The apparatus of claim 1, wherein the lever comprises:
a friction pad attached to the contact surface of the lever.

7. (Original) The apparatus of claim 6, wherein the friction pad is formed of a rubber material.

8. (Cancelled)

9. (Previously Presented) An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up sheets of paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a front portion of the paper cassette and guide the paper transferred by the pickup roller, the apparatus comprising:

a stripper which is installed to be inclined at a predetermined angle with respect to the paper stacked on the paper cassette, and attached to at least one front side of each of the paper guides;

a lever which is installed at a side of the stripper and has a contact surface to contact the paper transferred by the pickup roller;

a lever shaking unit which shakes the lever to intermittently contact a side of the paper transferred by the pickup roller; and

a lever shaft which is placed at the side of the stripper and rotatably installed on the frame of the printer, wherein the lever is fixed on the lever shaft, and the lever shaking unit shakes the lever shaft so that the lever is shaken,

wherein a friction force is intermittently applied to the side of the paper by the lever, such that double feeding of the paper is prevented,

the lever shaking unit comprises:

a shaking plate fixed on the lever shaft,

a cam gear which contacts a first side of the shaking plate, rotates, and periodically shakes the shaking plate so that the lever coupled with the lever shaft is shaken,

an elastic member which is installed at a second side of the shaking plate and applies an elastic force to the shaking plate so that the shaking plate is closely attached to the cam gear, and

a driving motor which rotates and drives the cam gear,

the driving motor rotates and drives the pickup roller, and

the stripper comprises an opening groove formed on an upper portion of the stripper such that the contact surface of the lever contacts the side of the paper through the opening groove.

10. (Cancelled)

11. (Original) The apparatus of claim 9, wherein the elastic member comprises:
a compression coil spring.

12. (Original) The apparatus of claim 9, wherein the elastic member comprises:
a leaf spring.

13. (Previously Presented) The apparatus of claim 9, wherein:
the cam gear comprises a cam surface; and

the lever shaking unit comprises at least one cam protrusion formed on the cam surface that contacts the shaking plate.

14. (Previously Presented) An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up sheets of paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a front portion of the paper cassette and guide the paper transferred by the pickup roller, the apparatus comprising:

a stripper, which is installed to be inclined at a predetermined angle with respect to the paper stacked on the paper cassette, and attached to at least one front side of each of the paper guides;

a lever, which is installed at a side of the stripper and has a contact surface to contact the paper transferred by the pickup roller;

a lever shaking unit, which shakes the lever to intermittently contact a side of the paper transferred by the pickup roller; and

a lever shaft, which is placed at the side of the stripper and rotatably installed on the frame of the printer, wherein the lever is fixed on the lever shaft, and the lever shaking unit shakes the lever shaft so that the lever is shaken,

wherein a friction force is intermittently applied to the side of the paper by the lever, such that double feeding of the paper is prevented, and

the lever shaking unit comprises:

a shaking plate fixed on the lever shaft,

a cam gear, which contacts a first side of the shaking plate, rotates, and periodically shakes the shaking plate so that the lever coupled with the lever shaft is shaken, the cam gear comprising a cam surface,

an elastic member, which is installed at a second side of the shaking plate and applies an elastic force to the shaking plate so that the shaking plate is closely attached to the cam gear,

at least one cam protrusion formed on the cam surface that contacts the shaking plate, the at least one cam protrusion comprising three sub-cam protrusions formed at the same intervals along a circumference of the cam surface that contacts the shaking plate, and

a driving motor, which rotates and drives the cam gear.

15. (Previously Presented) An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up sheets of paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a front portion of the paper cassette and guide the paper transferred by the pickup roller, the apparatus comprising:

a stripper which is installed to be inclined at a predetermined angle with respect to the paper stacked on the paper cassette, and attached to at least one front side of each of the paper guides;

a lever which is installed at a side of the stripper and has a contact surface to contact the paper transferred by the pickup roller;

a lever shaking unit which shakes the lever to intermittently contact a side of the paper transferred by the pickup roller; and

a lever shaft which is placed at the side of the stripper and rotatably installed on the frame of the printer, wherein the lever is fixed on the lever shaft, and the lever shaking unit shakes the lever shaft so that the lever is shaken,

wherein a friction force is intermittently applied to the side of the paper by the lever, such that double feeding of the paper is prevented,

the lever shaking unit comprises:

a shaking plate fixed on the lever shaft, and

a shaker, which is coupled with the shaking plate and periodically shakes the shaking plate so that the lever coupled with the lever shaft is shaken, and

the stripper comprises an opening groove formed on an upper portion of the stripper such that the contact surface of the lever contacts the side of the paper through the opening groove.

16-20. (Cancelled)

21. (Previously Presented) An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a portion of the paper cassette and guide the paper transferred by the pickup roller in a paper feeding path, the apparatus comprising:

a stripper disposed on the paper feeding path, fixedly installed on the frame to be inclined at a predetermined angle with respect to the paper stacked on the paper cassette, and contacting the paper transferred by the pickup roller to apply a first paper feeding resistance force to the paper;

a lever shaking unit, comprising

a lever shaft movably installed on the frame,

a plate extending from the lever shaft, and

a shaker, selectively contacting the plate to rotate the lever shaft; and

a lever disposed on the paper feeding path, installed on the shaft, and having a contact surface intermittently contacting the paper transferred by the pickup roller to apply a second paper feeding resistance force to the paper,

wherein the stripper comprises another contact surface contacting the paper and an opening formed through the another contact surface, and the contact surface of the lever is disposed in the opening of the another contact surface of the stripper.

22. (Original) The apparatus of claim 21, wherein the paper comprises a first paper and a second paper, and the stripper applies the first paper feeding resistance force to the first paper while the contacting surface of the lever applies the second paper feeding resistance force to the second paper.

23. (Previously Presented) The apparatus of claim 21, wherein the lever selectively contacts the paper while the stripper contacts the paper.

24. (Cancelled)

25. (Original) The apparatus of claim 21, wherein the lever moves in a direction between a first position to allow the contact surface to contact the paper and a second position to allow the contact surface to be moved away from the paper passing the stripper.

26. (Original) The apparatus of claim 21, wherein the lever rotates in a direction perpendicular to the paper feeding direction.

27. (Cancelled)

28. (Previously Presented) The apparatus of claim 21, wherein the contact surface of the lever contacts the paper through the opening.

29. (Original) The apparatus of claim 21, wherein the paper comprises a first paper and a second paper, the first paper and the second paper generate a friction force between the first paper and the second paper, and the second paper feeding resistance force is equal to or greater than the friction force.

30. (Cancelled)

31. (Previously Presented) The apparatus of claim 21, wherein the lever shaking unit further comprises:

a resilient member biasing the lever in a first direction.

32. (Cancelled)

33. (Previously Presented) The apparatus of claim 31, wherein the shaft is parallel to a width direction of the paper perpendicular to the paper feeding direction.

34. (Cancelled)

35. (Previously Presented) An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a portion of the paper cassette and guide the paper transferred by the pickup roller in a paper feeding path, the apparatus comprising:

a stripper disposed on the paper feeding path, fixedly installed on the frame to be inclined at a predetermined angle with respect to the paper stacked on the paper cassette, and contacting the paper transferred by the pickup roller to apply a first paper feeding resistance force to the paper;

a lever disposed on the paper feeding path, movably installed on the frame, and having a contact surface contacting the paper transferred by the pickup roller to apply a second paper feeding resistance force to the paper; and

a single motor rotating the pickup roller and moving the lever with respect to the stripper, wherein the stripper comprises an opening groove formed on an upper portion of the stripper such that the contact surface of the lever contacts the side of the paper through the opening groove.

36. (Previously Presented) An apparatus for preventing paper double feeding in a paper feeding unit of a printer having a frame, a pickup roller which picks up paper stacked on a paper cassette and transfers the paper into the printer, and a plurality of paper guides which are installed at a portion of the paper cassette and guide the paper transferred by the pickup roller in a paper feeding path, the apparatus comprising:

a stripper fixedly disposed on the paper feeding path to apply a first paper feeding resistance force to the paper fed by the pickup roller;

a lever movably disposed on the paper feeding path to selectively apply a second paper feeding resistance force to the paper fed by the pickup roller, the lever having a contact surface and being installed on a lever shaft rotatably installed on the frame;

a plate extending from the lever shaft; and

a shaker controlling the lever by intermittently shaking the plate to move with respect to the paper fed by the pickup roller, to intermittently contact the paper,

the stripper comprises an opening groove formed on an upper portion of the stripper such that the contact surface of the lever contacts the side of the paper through the opening groove.

37. (Cancelled)

38. (Cancelled)